

CA20N
WR
-W17

Program Established For 18th Industrial Waste Conference

The program for the 18th annual Ontario Industrial Waste Conference, to be held at the Sheraton-Brock hotel, in Niagara Falls, June 13-16, has now been fully established.

A wide range of papers relating to industry's role in

pollution control will be presented at the conference.

The registration desk will open Sunday, June 13, at 4 p.m. In addition to presentations by industrial representatives, in which specialized treatment methods will be detailed, papers by gov-

ernmental specialists in industrial pollution control will be included in the technical agenda. Dr. Donald A. Chant, chairman of the department of zoology, University of Toronto, will discuss the role of public pressure groups in environmen-

tal control, Tuesday June 15. Special guest speaker at the Tuesday banquet will be Dr. James M. Ham, Dean of the Faculty of Applied Science and Engineering at the University of Toronto. Dr. Ham's topic "Man and His Technology" will relate

technical development to the environment.

To obtain registration cards or further information, please contact conference secretary, Len Tobias at the Ontario Water Resources Commission 135 St. Clair Ave. W., Toronto 7.

Collins Vacates Commission Now At Trade And Development

Donald J. Collins vacated his position as chairman of the Ontario Water Resources Commission, late in April, to accept an appointment as deputy minister of the Ontario Department of Trade and Development.

Mr. Collins was appointed chairman of OWRC on April 1, 1969. During his two years with the Commission, many new programs for dealing with water supply and pollution control were evolved. Chief among these were a

program providing increased financial aid to municipalities for the construction of water and sewage works, the development of criteria and guidelines for the control of water quality and, most recently, implementation of a phosphorus removal program. Mr. Collins was also highly instrumental in the development of several area sewage and water supply schemes throughout the province.

Mr. Collins takes to his new position a considerable background in public administration and knowledge of governmental affairs. He has over twenty years experience in the civil service, serving as deputy minister of transport (1957-60) and simultaneously, chairman of the Civil Service Commission and deputy minister of the Department of Civil Service (1960-69). R. D. Johnston, formerly deputy minister of the Department of Civil Service, has been appointed to succeed Mr. Collins as chairman of OWRC.



D. J. Collins



Water management in Ontario

VOL. 4, NO. 2

Watertalk

APRIL/MAY, 1971

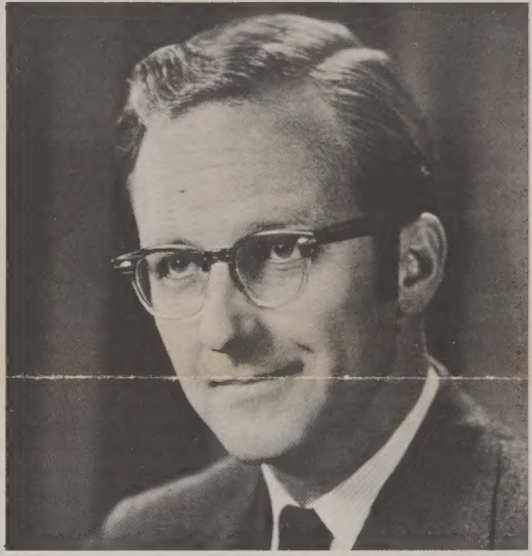
Formerly A Deputy Minister

Johnston has Administrative Background

R. D. Johnston, now chairman of the Ontario Water Resources Commission, has a broad experience as an administrator of governmental and industrial programs.

As deputy minister of the Civil Service Commission, he placed a priority on developing methods for maintaining civil service efficiency and was deeply involved in the personnel management study for the Committee on Government Productivity program. From 1964-69, prior to his appointment as deputy minister, he was director of staff relations, Treasury Board Secretariat, and acted as the government's senior negotiator in matters pertaining to collective bargaining.

Before joining the Treasury Board, Mr. Johnston worked with Provincial Paper Ltd., Canadian Westinghouse Co. Ltd., and the John Inglis Company Ltd., in various capacities in the field of personnel



R. D. Johnston

administration. Mr. Johnston is an avid skier and little theatre actor. He is married with two sons.

Phosphorus Removal Program For Ontario Treatment Plants Introduced By OWRC

A program designed to curb excessive algal growth in Ontario waterways while stimulating recovery in existing problem areas was introduced early in April by the Ontario Water Resources Commission.

The program, incorporating a timetable, requires the installation of facilities capable of removing a minimum of 80% of phosphorus from sewage at municipal and institutional sewage treatment plants throughout the province.

Phosphorus is one of the essential nutrients for algal growth and reproduction. Extensive study conducted in Ontario and elsewhere has determined that the introduction of phosphorus into water ways in excessive quantities can trigger development of undesirable algal conditions. Excessive algae lead to a deterioration in the quality of aquatic life by draining oxygen from the water, interfere with water supply systems and recreation, and pose many nuisance and esthetic problems.

According to the timetable, the facilities are to be installed by the end of 1973 at treatment plants in the Lake Erie drainage basin and at many points in the upper Great Lakes, inland recreational waters and the Ottawa River system. December 31, 1975, has been set as the final date for commencement of operation of these facilities in the Lake Ontario basin.

Treatment for phosphorus will be required at other plants as localized conditions dictate. Cost of the program, to the end of 1975, is estimated at \$40 million by which time it is expected over 200 municipalities will have installed facilities.

The necessity for reducing the amount of phosphorus entering the lower Great Lakes system to the lowest

practical level has been stressed by the International Joint Commission. Municipal sewage represents, by far, the greatest contributor of phosphorus. Approximately 2/3 of the phosphorus entering Lake Erie is from municipal sources.

OWRC has conducted studies of the algal problem on a province-wide basis. Besides assessing the effect of phosphorus loadings on vari-

ous lakes and water systems, the Commission has conducted research into methods for curbing phosphorus discharge.

Since municipalities represent such a significant source of pollution, it is anticipated that removal of the nutrient at sewage treatment plants will lead to gradual recovery of affected waters through natural processes.

Cleanup Of Pickerel River Sulphuric Acid Spill Completed

Clean-up of a 1000-ton sulphuric acid spill on the Canadian Pacific Rail line at Pickerel River, 57 miles north of Parry Sound has been completed.

Officials of the Ontario Water Resources Commission said tests indicated a 5 1/2-month long program to neutralize the acid has been successful.

The \$250,000 program to neutralize the acid started within hours of the derailment last December 9 of 13 tank cars carrying sulphuric acid from Copper Cliff to Hamilton. While some of the

acid was recovered from the ruptured cars, an estimated 80,000 gallons entered a small lake and bay which drain into the Pickerel River.

Technical resources of Canadian Industries Limited, for which the acid was being transported, the Ontario Department of Lands and Forests, and CP Rail were utilized to minimize environmental damage and neutralize spilled material. Dikes constructed of crushed limestone were bulldozed into positions to prevent the water of the bay from reaching the river. Thirty-four tank cars of liquid

caustic soda, distributed to all parts of the affected area by plastic hoses through holes drilled in the ice were used to neutralize the sulphuric acid.

Day-to-day progress of the program was planned and monitored by OWRC personnel, including Kim Shikaze of the Commission's division of industrial wastes and Les Fitz and Lawrence Olivier of OWRC's Sudbury district office.

Dennis Caplice, director of OWRC's division of industrial wastes indicated that the

Commission will be monitoring downstream quality of the Pickerel River to ensure that no residual persists.

"Tests initiated immediately after the derailment occurred showed no acid reached the mainstream of the river," he said. "The solution formed in the neutralization process, which has been flushed into the river, presents no hazard to aquatic life. We will be undertaking biological studies to see how quickly the small bodies of water into which the acid seeped can be returned to normal."



Watertalk

Published bi-monthly by the Ontario Water Resources Commission
Public Relations and Information, 135 St. Clair Ave. W., Toronto 195,
Ontario for those interested in the many facets of water management.
Reproduction of articles authorized without further permission.

Editor: L. A. Marshall

Director of Public Relations and Information: M. F. Cheetham

Two Impressive Conferences

It is only necessary to glance at the agendas of two of the main 'water' conferences—those of the Ontario sections of the American Water Works Association and the Canadian Institute on Pollution Control—held in March and April, respectively, to realize that water management has come of age.

Immediately impressive is the wide variety of subjects under discussion, ranging from a consideration of methods for ensuring that water remains free of harmful viruses to examination of problems associated with urban drainage.

What is even more impressive, though, is that a large proportion of the ideas under discussion have actually reached the implementation stage.

In the water supply sector, two new concepts presented for discussion at the AWWA conference—the use of sodium silicate to remedy iron problems in municipal water supplies and the foam swab technique for cleaning water distribution systems—have now been utilized by a large number of municipalities in Ontario. Both techniques remedy problems that have caused considerable nuisance in the past.

Also presented at the AWWA conference was a description of OWRC's guidelines and criteria for water management. This comprehensive system, which established water quality standards via a river basin approach is now in effect. Similarly, a far reaching program for control of nutrient pollution, detailed at the CIPC conference has been implemented.

Besides showing, then, that specialists from many different fields are considering a wide range of problems associated with the environment and water supply, the items on the agendas show that comprehensive programs are well beyond the "talk" stage. In fact, the papers show that Ontario has taken direct steps in implementing what many other jurisdictions consider futuristic programs.

OWRC Phosphorus Program Outlined At Ontario CIPC Conference

OWRC's new phosphorus removal program was detailed by Grant Mills of the Commission's division of sanitary engineering in a paper at this year's meeting of the Ontario Branch of the CIPC.

Mr. Mills explained that the program is necessary despite a proposed Federal ban on phosphates in detergents since approximately one-half of the phosphorus in sewage is due to human waste. However, he considered the proposed Federal ban a valuable step.

"There are some who question the value of removing phosphates from detergents when phosphorus removal is to be a requirement at sewage treatment plants. . . . Elimination of phosphorus from detergents will reduce the influent concentration by about one-half and assuming 90 percent removal, an effluent of less than one milligram per litre can be obtained. In most cases adequate protection of major bodies of water will be realized if we can achieve the effluent quality," Mr. Mills said that the effluent quality would be of a lower grade without removal of phosphates from

detergents.

While paying particular attention to the lower Great Lakes, OWRC has been studying many of the inland recreational waters, portions of Lake Huron, the Ottawa river-shed and other lakes and rivers, Mr. Mills pointed out.

He described findings of an intensive study being conducted in the Muskoka lakes.

"Except for Gravenhurst Bay, which was found to be highly enriched, excellent water quality is generally evident throughout. Some other localized areas showed evidence of lower levels of enrichment. Control of inputs will be required to restore Gravenhurst Bay and prevent other areas

CIPC Delegates Called Slackers

The trouble with people in the pollution control industry is that they are "sitting down and waiting for others to be spokesmen," delegates to the second annual conference of the Ontario branch of the Canadian Institute on Pollution Control were told.

The observation was made by Dr. J. D. Norman, Associate Professor of Chemical Engineering, McMaster University as he suggested that the CIPC should be assuming the role of technical spokesman in pollution control.

Dr. Norman said that a main reason that the nutrient enrichment problem has reached such proportions is that we "didn't want nutrient removal as much as projects like Expo." "Some of us knew in 1967 what the score was . . . but there has been virtually no accomplishment to date," he maintained.

Dr. Norman cited Expo '67 and the Lake Tahoe, Nevada, sewage control project as examples of how efficiently an objective could be realized once it was deemed a priority. He also praised the Ontario government's handling of the mercury crisis.

By delaying nutrient removal, he said, we have "lost valuable time and avoided spending an inevitable amount of money a few years."

Former Chairman Explains Guidelines

How the guidelines and criteria developed by the Ontario Water Resources Commission to ensure high water quality standards throughout the province will be applied was detailed at the AWWA-OMWA conference by OWRC former chairman D. J. Collins.

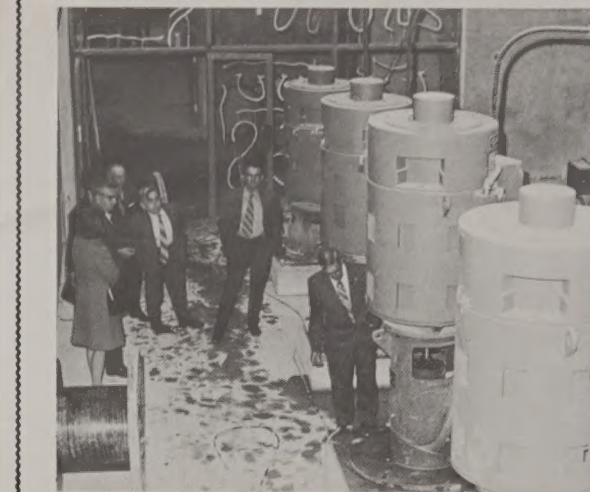
Pointing out that if water use had been more carefully and efficiently planned in the past "we wouldn't be in the position we are in today," Mr. Collins affirmed that it is still possible to "turn back the clock and recover some of the water quality that has been lost." The criteria, he said, will do this by establishing standards for the various river systems or drainage basins.



J. D. Norman

Although some water treatment plants in North America are not employing techniques adequate to protect users from waterborne viruses, incidents of viral diseases transmitted by drinking water have been extremely rare, delegates to the AWWA-OMWA annual conference were told.

Donald Williams, water works chemist for the Brantford Public Utilities Commission, discussed the adequacy of present treatment practices for dealing with viruses in water supplies in a paper presented during the technical



Preview At Elgin Treatment Plant

An inspection tour of the new Elgin water supply system, designed to service St. Thomas, the nearby Ford of Canada plant, and any future industries at Talbotville, the townships of Yarmouth and Southwold, and other municipalities in the area, was held in May. The tour was attended by representatives of the municipalities concerned as well as OWRC officials.

Photo at upper left shows massive pumps located in treatment plant. The plant is to have an initial capacity of 10 million gallons per day. Left: E. A. Ladbroke of OWRC's London regional office explains relevant factors in plant operation.

Above: (l to r) OWRC commissioner D. A. Moodie, E. A. Fanjoy, mayor of St. Thomas, E. A. Ladbroke, and OWRC general manager D. S. Caverly appear well satisfied with plant layout.

Right: Former OWRC chairman James Vance meets Robert Johnston, new chairman, on plant site.

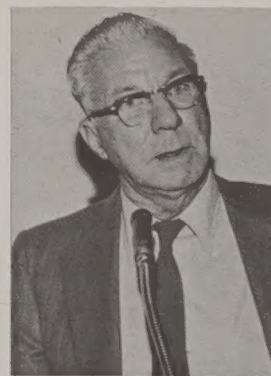


Increasing Population Poses Viral Threat AWWA Delegates Told

sessions of the conference.

With the refinement of water treatment practices through chlorination and filtration, the bacteria problem has been curtailed, Mr. Williams said.

"We are now jarred out of our complacency by the viruses and the experts tugging at our elbows are virologists. Some of them seem to feel that on the basis of epidemiological evidence present water treatment practices appear to be adequate in protecting the consumer against viruses, whereas at least one of them



Donald Williams

has accused us of endangering our public by a number of viruses which they, the virologists, have not even yet discovered."

Mr. Williams said that only two pathogenic viruses have been considered as being transmissible by the water route—infectious hepatitis and polio, though the latter has not been linked to drinking water. "Although many attempts were made in the 1930s and 1940s to implicate drinking water as a means of spreading poliomyelitis, the majority of investigators have remained unconvinced," Mr. Williams pointed out.

According to Mr. Williams, the activated sludge sewage treatment plant, with its pres-

ent treatment regimen, is not completely successful in removing or inactivating viruses—"It would appear that an increasing population threatens us with an increased virus load in our rivers and lakes."

Mr. Williams described the virus problem as one which could be dealt with in relatively the same manner as the bacteria problem. He added, however, that, though the types of water treatment necessary for protecting viruses are well within the capabilities of the average water treatment plant "this does not mean that every water treatment plant is protecting its consumers against viruses."

This was particularly true of treatment plants which only employ marginal chlorination and do a poor job of clarification (filtering).

Mr. Williams suggested such plants "get away with it" mainly because the raw water has a low coliform bacteria content and therefore a low virus load. "Until increasing pollution with its proportionately greater virus load catches up with these plants, they are just going to be very plainly lucky in getting away with it," he observed.

He said that though simple clarification and chlorination are the two forms of treatment

found in most water treatment plants, impressive research is building up in regard to other forms of treatment in defeating the virus problem, such being iodine, ozone, chlorine dioxide, permanganate and excess

lime softening, to mention only five.

"Certainly there is no justification for undue alarm and just as certainly there is no justification for any degree of complacency," he said.

Recreational Lakes Program Expanded Three Teams Conduct Surveys

OWRC has expanded its recreational lakes survey program to three teams this year.

Last year, when only one team was committed to the program, the water quality investigations were focussed on the Kawartha. Though sampling was accomplished in other intensive use areas such as Orillia and Parry Sound, the single team was not able to accommodate all demands.

A major thrust of this year's program will be directed eastward through the Trent system from Balsam Lake. Because of its importance as a recreational area the Trent system has been given a high priority in the water quality studies. Balsam, Cameron, and Sturgeon Lakes will each be subjected

to three 11-day surveys during the course of this year's operations. Over 20 other lakes in high use areas throughout the province will also be investigated. Each lake will be surveyed at three separate intervals for five or 11-day periods to ensure maximum accuracy.

Full-scale survey operations commenced in mid-May and will continue to October. Each team is equipped with a mobile laboratory for on-site testing, a survey vessel, and the necessary sampling equipment.

While the OWRC teams are sampling to determine water quality in the lakes, survey teams from the Department of Health will be assessing the adequacy of cottage waste treatment facilities.

**It's our water.
Let's keep
it clean.**

Ontario Water Resources Commission

Sign Points To Correct Direction

Objective of clean water is stressed in OWRC's billboard which will soon be a familiar sight in recreational areas of the province. 147 billboards will be on display during the summer months in strategic municipalities and on access routes to recreational lakes.

The billboard advertising is in support of the Commission's recreational lake pollution survey program.

As part of the advertising program, plans have been finalized for broadcasting

anti-pollution reminders from radio stations in a total of 19 communities.

Additionally some 50 weekly newspapers will carry messages emphasizing careful handling of garbage, oil and gasoline in recreational communities.

Refinements Made To Silicate Process For Iron Treatment

Now that OWRC's division of research has successfully implemented a highly effective and economical method for remedying iron problems in municipal water supplies, researchers have been con-

centrating on further improvements.

To date about 13 Ontario municipalities have taken advantage of the technique which "locks up" the nuisance iron in a soluble form

via the addition of a harmless silicate at the water treatment plant.

The major development since introduction of the technique has been the refinement of a method for de-

termining the amount of silicate a municipality must add to its water supply to curb its iron problem. The point at which all iron becomes soluble is dependent on several factors and varies markedly from community to community.

Initially the amount of silicate needed was estimated by a trial and error method. The effects of varying amounts of the silicate were observed by the most basic of methods—leaving the tapwater running and looking for a stain.

Research conducted in the past year has led to the development of a "test series" method for determining the optimum amount of silicate. The test requires very simple apparatus and is designed to be performed at the site of the water supply plant where treatment is to occur.

OWRC researchers have also been working on a method for removing the iron silicate compound from the

water. Unfortunately, some industries are adversely affected by iron even in its soluble form. The silicate treatment permits iron to pass through the conventional iron removal systems installed by industries.

To date, two solutions have been evolved for dealing with this complication—each requiring the addition of inexpensive equipment. One, an anionic process, accomplishes the removal of the iron-silicate via ion exchange. In the second technique, iron is added to the silicate treated water prior to utilization. For reasons as yet undetermined, all the iron—even that which has been stabilized by the silicate—can be precipitated in this manner. The iron precipitate is then removed by filtration.

It is anticipated that with these refinements the iron treatment process will be even more readily available to communities with iron problems.



JIM DART, DIVISION OF RESEARCH, studies graph depicting silicate needed to curb typical iron problem.

News Round-up

- A three-day course on the subject of Industrial Waste By-law Enforcement will be conducted by OWRC's division of industrial wastes, September 15-17.

The course will be held at the OWRC laboratories and is given in cooperation with the OWRC—City Engineer's Association Advisory Committee. Purpose of the course is to acquaint municipal staff and others, such as consultants and industrialists, in the many aspects of industrial waste control and enforcement in which they may be involved.

The course will deal with such subjects as sewer-use by-laws, surcharges, sampling, flow measurement, industrial waste characteristics, and effects of industrial wastes on treatment and on sewer systems.

Further information concerning the course can be obtained from K. Shikaze, division of industrial wastes, OWRC.

- John Neil, director of OWRC's division of research, has been appointed to the board of directors of the International Association for Great Lakes Research.

The association was formally established in 1966 to promote all aspects of Great Lakes research and the distribution of research information through publication and meetings. Membership is composed of persons representing a wide variety of disciplines related to Great Lakes research.

The annual conference of the association was held in Toronto this year, April 19-21.

- A brochure published by the Ontario Department of Lands and Forests details the various factors associated with Ontario's mercury pollution problem.

Entitled '... About Mercury in Fish', the brochure is directed primarily towards sports fishermen. It describes how mercury became a problem in Ontario and other parts of the world and explains the processes through which it reached Ontario's waterways.

The publication also points out the areas considered polluted by mercury and discusses the economic impact of the problem.

Boating Program Continues Smooth Development

As part of OWRC's program for curbing discharge of contaminants from boats, inspections were carried out on commercial vessels in winter lay-up ports relative to the disposal of seacock filler, garbage and sewage. Checks were also made to determine if commercial ships are taking on ballast water from dirty ports and disposing of it in other, cleaner ports.

Inspections made this season in ice fishing areas revealed some improvement in connection with the disposal of garbage and sewage.

Of the pleasure boats inspected during the 1970 boating season, there was a marked decrease in violations from the previous season. More boats were checked and

less were in violation—17% in 1970 compared to 32% in 1969. Plans call for inspections of as many pleasure boats in 1971 as were made in 1970 (approximately 3,100), with added concentration on other wastes such as galley sink wastes and laundry wastes whereas previous concentration has been on wastes from the head. Visiting boats are also subject to inspection and closer scrutiny will be maintained over houseboats with sanitary facilities.

Approximately 150 marinas and boat clubs offered pump-out services for pleasure boat holding tanks by the end of last year's boating season, which was virtually over by the time pump-out regulations came into effect. Ninety more pump-out facilities are

expected to be in operation during 1971.

Plans have been completed to place a member of OWRC's boating staff in the Commission's regional offices at Sault Ste. Marie, Kingston and London. This move is expected to further improve the effectiveness of both the marina and boating programs.

Most of the states surrounding the Great Lakes—except for Pennsylvania—have boating laws compatible to Ontario's, prohibiting overboard discharge of sewage. Proposed federal legislation, which may provide for treatment of sewage on pleasure craft as well as commercial vessels, is now pending in the United States.



Commission Gets Into Air Pollution Control

Performance and Pollution have both been taken into consideration in a three-quarter ton pick-up truck which OWRC recently had converted to run on propane.

According to Commission maintenance personnel the 'clean' vehicle is as efficient and economical as conventionally fuelled vehicles. Two 20-gallon propane cylinders give a range of from 250 to 270 miles. Motor buffs will agree that the difference really lies under the hood (inset).